

CLAIMS

1. An input device of the electronic cipher code lock, comprising:

- a signal device for producing cipher code input information and for converting said information into two groups of electrical pulse signals;
- a measurement and control device connected to said signal device for measuring the electrical pulse signals outputted from the signal device, deciding the order of the electrical pulse signals and calculating correspondingly such that said signals are converted into character sequences including the cipher code elements, and deciding whether said current cipher code elements are confirmed to be inputted or not and deciding whether the input of all the cipher code elements is completed or not;
- a confirmation device connected with said measurement and control device and used for producing a conformation signal for inputting the cipher code elements to indicate that the input of the current cipher code element is confirmed; and
- a display device connected with said measurement and control device for displaying said character sequences and for displaying prefabricated prompt information in a rolling and refreshing manner by the driving of said measurement and control device.

2. The input device of the electronic cipher code lock as described in Claim 1, wherein said confirmation device is a switch device, an electrical signal produced when it is closed allows said measurement and control device to confirm the current cipher code element displayed by said display device as a part of the input cipher code.

3. The input device of the electronic cipher code lock as described in Claim 1, wherein said measurement and control device is also used for deciding whether during a given timing period which starts each time when a signal is produced by said confirmation device, the timing period expires or not,

and if the timing period expires, then it decides that the input is during overtime.

4. The input device of the electronic cipher code lock as described in Claim 1 or Claim 2, wherein the preset information displayed by said display device is indicated by symbols, wherein the close and open states of the lock are indicated by a symbol having a padlock shape, the time at which the lock is opened on time or is delayed to be opened is indicated by a symbol having a clock shape, the code setting state is indicated by a symbol having a key shape, and low power of battery is indicated by a symbol having a battery shape, and the confirmation states of the respective parts of the cipher code are indicated in turn by the remaining dot symbols.

5. The input device of the electronic cipher code lock as described in Claim 2, wherein,

said signal device comprises: a panel body, a dial which is installed on said panel body and can be rotated freely, a drive shaft fixed at the center of said dial, a set of driving gears installed on said drive shaft, a driven gear which meshes with said driving gears, and a rotating coder coupled with said driven gear on the same shaft;

said measurement and control device is a programmed microcontroller;

said display device is an information display screen; and

said switch device is a photoelectric switch,

wherein said microcontroller, coder, information display screen and photoelectric switch are provided on the same circuit board, said circuit board is provided within said panel body, and said microcontroller is connected electrically with said coder, information display screen and photoelectric switch respectively.

6. The input device of the electronic cipher code lock as described in Claim 5, wherein the outer edge of said dial is a circular skirt-like fringe, the position of said photoelectric switch corresponds to the skirt-like fringe of said

dial, when said dial is depressed, the light transmitted to the photoelectric switch is blocked by said skirt-like fringe, thereby a signal is produced by said photoelectric switch.

7. The input device of the electronic cipher code lock as described in Claim 5, wherein the upper part and lower part of said panel body have a hunched ear edge like shape, and said panel body further comprises:

grooves provided in back of said ear edge and matched with the fingers;

a display window, the shape and size of which matches with the shape and size of said information display screen, and which forms an oblique angle together with said information display screen for viewing effectively the displayed information; and

a guiding hole provided at the display window side of said panel body for inserting an emergency key.

8. The input device of the electronic cipher code lock as described in Claim 5, wherein it further comprises a reset spring installed within an internal axial hole provided on said drive shaft of said dial.

9. The input device of the electronic cipher code lock as described in Claim 5, wherein a concentric circle plane gullet is provided on the internal end face of said driving gear, and a blind hole is provided on said plane gullet at a position corresponding to said panel body, and a steel ball and a spring are installed in said blind hole, said steel ball contacts and matches with the concentric circle plane gullet of said driving gear under the action of the spring.

10. The input device of the electronic cipher code lock as described in Claim 2, wherein,

the signal device is a roller device, it comprises: a roller, a coder which is coaxial with the roller, and an elastic bracket for supporting said roller;

said measurement and control device is a programmed microcontroller;

said display device is an information display screen;

said switch device is a microswitch provided below the shaft extension of

the roller,

wherein said microcontroller is connected electrically with said coder, information display screen and microswitch respectively.

11. The input device of the electronic cipher code lock as described in Claim 10, wherein,

said information display screen is used for displaying 1-bit or 2-bit number in a circularly rolling manner of an ascending order or descending order according to the direction and angle of the rotation of said roller;

said microswitch is used for that when the roller is depressed, the microswitch is actuated by the shaft extension of said roller, thereby the rolling display of said information display screen is stopped, so that the number displayed currently is confirmed as a part of the cipher code; and

said elastic bracket is used for resetting said roller after releasing the depressed roller.

12. A handle of the cipher code lock, wherein said handle is hollow and comprises:

an input device of the electronic cipher code lock as described in Claim 10, which is fixed within a cavity of said handle;

a first window provided on the surface of said handle, the first window corresponds to said roller may be dialed and depressed,;

a second window provided on the surface of the handle, the second window corresponds to said information display screen thereby the contents displayed may be viewed,; and

a rotation shaft fixed within the handle with a through-hole used for the wires to be passed through provided therein,

wherein the input device of the electronic cipher code lock is connected with a cipher code identification device of the cipher code lock and a power supply which are installed inside the core mechanism of the lock or installed at other position inside the door via the wires.

13. A handle of the cipher code lock, wherein said handle is hollow and comprises:

a handle body comprises a rotation shaft fixed therein, and a through-hole provided inside said rotation shaft for allowing the connection wires to be passed through;

a panel, the input device of the electronic cipher code lock as described in Claim 10 is installed inside the panel, a first window, which corresponds to said roller thereby said roller may be dialed and depressed, and a second window, which corresponds to said information display screen thereby the contents displayed may be viewed, are provided on said panel; and

a transparent window cover provided on a plane on which there is said second window,

wherein a hollowed region, which has the size and shape matching with that of said panel, is provided on the front surface of the handle body, thereby said panel can be embedded therein, and

said handle of the cipher code lock is connected with a cipher code identification device and a power supply of the cipher code lock, which are installed inside the core mechanism of the lock or installed at other positions inside the door, via the wires.

14. A handle of the cipher code lock, wherein it comprises:

a handle body;

a handle base with the microcontroller and information display screen of said input device of the electronic cipher code lock described in Claim 10 installed therein, and a second window, which corresponds to said information display screen thereby the displayed contents may be viewed, is provided on the front face of the base; and

a panel, a roller device of the input device of the electronic cipher code lock as described in Claim 10 is installed inside the panel, a first window having the size and shape matching with that of the roller thereby said roller

may be dialed and depressed is provided on the surface of said panel,

wherein said handle is hollow, and a cavity matching with the size and shape of said panel is provided on the front surface of the handle, thereby said panel can be embedded therein, and

said input device of the electronic cipher code lock is connected electrically with a cipher code identification device and a power supply of the cipher code lock which are installed inside the core mechanism of the lock or installed at other positions inside the door via the wires.

15. A panel of a cipher code lock for the chests and bags, wherein the panel of the cipher code lock for the chests and bags is fixed on the external surface of the chest body, it comprises:

an input device of the electronic cipher code lock as described in Claim 10 installed within said panel;

a first window provided on the surface of said panel, which matches with the size and shape of said roller thereby said roller may be dialed and depressed; and

a second window provided on said panel, which matches with the size and shape of said information display screen and having a transparent window cover provided thereon thereby the displayed contents may be viewed,

wherein said input device of the cipher code lock is connected with a cipher code identification device and a power supply of the cipher code lock which are installed inside the chest body via the wires.

16. A method for inputting the cipher code of a cipher code lock, wherein it comprises the steps of:

a. receiving the rotation information of the dial or roller via a signal device and converting it into two groups of electric pulse signals;

b. measuring, deciding and calculating said two groups of electric pulse signals by a measurement and control device, and further converting them into element sequence constituted by the cipher code;

c. displaying said character sequences including the cipher code elements and the preset information by a display device, wherein the rolling refresh rate for displaying the character sequences including the code elements is a function of the signal frequency of said two groups of electric pulse signals, the element sequence of the cipher code is rolling refreshed in an ascending order or descending order manner which corresponds to the rotation direction and angle of said dial or roller;

d. when the input of the current cipher code element is confirmed, a confirmation signal for inputting the cipher code element is produced by a confirmation device;

e. after said confirmation signal has been detected by the measurement and control device, the input of the current cipher code element is confirmed; and

f. the measurement and control device further decides whether the input of all the cipher code elements is completed or not.

17. The method for inputting the cipher code as described in Claim 16, wherein said method further comprises the following step: when a signal is produced by said confirmation device, a given timing period is started, after that, whether the timing period expires or not is decided by the measurement and control device, if the timing period expires, then it decides that the input is during overtime.